



**Frontispiece** Sonia Landy Sheridan, *Drawing in Time*, 1982, self-portrait computer drawing using EASEL software by John Dunn and Cromenco Z2D hardware.

# Computers and Art: Issues of Content

By Terry Gips

The essays in this issue examine the complex layers of our electronic culture in order to determine how art and artists are shaping and being shaped by it. Each writer takes an individual perspective, but one agenda that served as an impetus for initiating the overall project was that of enriching the theoretical and philosophical discourse about art made with computers. While conferences and journals have over the years provided forums for the fruitful exchange of *technical* concepts, many artists, curators, and critics have bemoaned the lack of a *critical* dialogue. Without it, few artistic practices, particularly ones as conceptually based as electronic art, can effectively engage the more substantive questions. In practical terms then, this issue is an attempt to mitigate the existing condition and, through texts and images, establish a more solid theoretical ground for producing and understanding digital art.<sup>1</sup>

There seems to be consensus that artists must go far below technology's razzle-dazzle surface and grasp its intricate relationships with society. Some of the writers undertake this by describing, either directly or indirectly, the general context frequently identified as the Information Age or the Cybernetic Era. A quick overview of some of its key features, as well as its internal inconsistencies, is offered here for examining the papers that follow.

From one perspective, today's world is made up of diverse parts that are interconnected and unified by technology's pulsing weblike apparatus. Tuning in to this system, we are exhilarated by its signals and empowered as our realms of experience expand. The unprecedented exchange of ideas is very real. Likewise, the changes in visual perception might be seen as analogous to multiplying the benefits of the mi-

croscope and telescope by 10, 50, or 100. From another perspective, we note that the electronic network thus far bypasses some parts of society altogether and puts strain on certain aspects of our global culture. Personally, we may feel out of touch—we press the cold keys of machines but can't make direct contact with the hidden circuits or their fleeting signals without mediating devices. On a societal scale, access to the most powerful technologies is currently limited to a select few. In addition, being "plugged in" often means "receiving" but not "producing" ideas for the network.<sup>2</sup> Since visual, verbal, and quantitative information can be produced and manipulated with appalling ease by those who possess access to the generative points of the system, consideration must be given to such disparities of access. Our lives are enhanced by the outpouring of information, but we can also be numbed by the euphoria of excessive sensory stimulation and lose sight of the reason we are plugged into this seductive and illusory net.

The nature of this network and its embrace (Roy Ascott's term)—how it "interfaces" with artists and the society as a whole—becomes an underlying theme throughout most of the articles. Ascott asks a pivotal question: "Is there love in the telematic embrace?" and, like Timothy Binkley in "The Quickening of Galatea," uses a metaphor of human love and intimacy to structure his thoughts about the place of computers in the arts.

The other contributors may be less determined to humanize the computer and its overall ambience, but each acknowledges its enigmatic character. All see it as more than an ordinary machine, granting it some sort of special status such as the "magic box" of Deborah Sokolove's article. Their views are, I believe, an accurate reflection

of the myriad ways these devices are used by artists, as Cynthia Goodman enumerates in her article. Some artists isolate specific computer functions and use them in limited ways for parts or stages of their work, while others put digital technology at the center of their studios. For some we might even say that the computer *becomes* the studio. In my work, for example, the box containing the labyrinth of circuits and chips serves simultaneously as a mental and physical environment, a "house" for thinking and remembering, a space in which to construct ideas and images. Like many using computers in their art, I move in and out of that cyberspace, maintaining a traditional studio and an interest in art objects at the same time that the technology leads me toward more conceptual concerns. For other artists, including several describing their work in this issue, the art object becomes a thing of the past.

Overall, the articles that follow push beyond descriptions of what artists *can* and *do* achieve technically with computers to grapple with the much more demanding issues of content. In fact, a key thesis for Ascott is that content is not embedded in electronic artworks (objects) to be read or received by a viewer/consumer; rather, it is "transient hypotheses" created again and again at the interface with the system. The artwork—in his ideal model a telematic system—consists of an open-ended communications structure in which each observer is a participant, and without whom there would be no content. No finished works materialize from this system: the content—if we can even use that concept—is in a constant state of flux, eluding definition. The texts and the images in this volume are convincing evidence that "computer art" defies categorization by media and that "computer

**Sony Video Walkman. The TV and VCR for people with outside interests.**

Whoever said, "You can't take it with you" didn't have the Sony Video Walkman™ Personal TV/VCR in mind.

It's the first compact portable TV and VCR that can actually be held in the palm of your hand. So if you're someone who's going places, it'll come in very handy.

If you're someone without a lot of time on your hands, there's a built-in 8mm VCR. With an easy-to-use timer. So you can record up to 4 hours of your favorite TV programs.

And watch them or your favorite movies in your own good time. All of which makes the Sony Video Walkman perfect for time-shifting. And place-shifting.

Not only can you use the Video Walkman whenever or wherever you want, you can use it however you want. You can watch its 3" color LCD TV screen with unbelievable sharpness and color fidelity. Or connect it to any other ordinary TV.

But you ain't seen nothin' yet.

The Video Walkman weighs a lightweight 2½ lbs., but it's not light on features. It has high-speed picture search. A sleep timer that turns it off one hour after you've turned yourself off. A worldwide, multi-voltage AC adapter battery charger. And a built-in TV tuner with full VHF and UHF reception.

Which brings us to another feature sure to get a great reception. Our highly adaptable audiovisual input. You'll be sky-high on it because it lets you record and

play back your Video 8® home movies. Or edit them, no matter what format you shot them on.

Now if you think all this sounds pretty good wait until you hear the Video Walkman. With its exceptional high-fidelity sound.

Besides getting a lot of enjoyment out of the Video Walkman, you'll get a lot of enjoyment into it. For there are over 1300 movie titles now available on 8mm. Like Crocodile Dundee II. The Accidental Tourist. Coming to America. The

Dead Pool. And A Cry In The Dark. And if all that wasn't enough, the

sky's the limit on the home instruction, travel and video magazines available. They're part of the video publishing software on 8mm.

So, if your interests take you out. Or in. Up. Or down. Check out the Sony Video Walkman Personal TV/VCR.

It's the most incredible TV and VCR you'll find anywhere.

**SONY.**  
THE ONE AND ONLY.

© 1989 Sony Corporation of America. Sony Video Walkman, Video 8 and The One and Only are trademarks of Sony. Simulated television picture. All titles used with permission.

**Figure 1** Sony Corporation of America, Sony Video Walkman advertisement, 1989. Used with permission of Sony Corporation of America.

artists" regularly traverse both production and theory, dissolving the differences between picture and word, process and philosophy.

An image that lends insight into the paradoxical nature of computers and our cybernetic environment is a Sony Video Walkman magazine ad from 1989 (fig. 1) in which a chic parachutist floats across the page; below him lies an idyllic valley of carefully cultivated fields encircled by forested mountains. With utter confidence, his parachute not yet unfurled, he holds a two-and-a-half-pound portable TV/VCR in his white-gloved hands. On its tiny three-inch screen he watches another skyjumper (or is it himself in a future moment?) descend from a blue sky, brightly colored nylon already arched above him. The text advises that "you'll be sky-high on it . . ." and that it's " . . . perfect for time-shifting. And place-shifting." Besides giving the electronic device these magical powers, the ad raises the TV/VCR close to human status by identifying its control (i.e., cybernetic) functions: it has "a sleep timer that turns it[self] off one hour after you've turned yourself off." The

ad also describes the "worldwide AC adapter" and "full TV tuner," assuring access to whatever signals are broadcast, wherever the user may be. It is implied that the parachutist may float above the worldly terrain as long as is desirable, tuning in to what he likes (mostly for entertainment) and that, should he decide to descend, there is little danger of muddying his yellow suit or white shoes as he touches down on the spotless photoscape. The fine print at the bottom of the ad acknowledges that the tiny image on the TV in the sky-jumper's hands is a "simulated television picture," as if the overall landscape and figure were a single unretouched image photographed during freefall by another equally nonchalant skyjumper equipped with a camera. The reader who stops to think knows that this, too, has been fabricated in the photo studio or with a computer. (More about such photos later.)

Although the image purports to be uncomplicated, and although the portable video is clearly not a computer, it reveals much about our cybernetic era. It paints a beautiful picture of technology but trivializes the complexity of using it. It can also be seen as an overly simplistic view of our cultural cyberspace, a place above the more

messy concerns of today's society. Artists, like other users of computers, have learned that cybernetic technology has exceedingly desirable possibilities, but that it provides no panacea for aesthetic and social problems.

In order to better understand the new cyberspace, as well as some of the basic issues of art made with computers, we might look at the Greek root, cyber, which has to do with steering or being at the helm. If we reach for a rudder to control our course in this nebulous environment that supersedes land, sea, air, and anything tangible, we may find the handle elusive. It no longer fits the hand, as do the common tools that have historically set humans apart from other species. In fact, this rudder is not even a tool in a new guise but a new category of device altogether: a phenomenon. While the computer's "peripheral devices," such as printers, perform manual tasks, as do tools, the heart of the computer extends the thinking mind, not the hand. That computers are not really tools at all but rather extensions of the mind is vividly argued by Binkley. Christine Tamblyn writes from a related perspective, focusing on conceptualism and interactivity as distinguishing attributes of



much digital art. She draws parallels between the data-exchange space of computer installations and that of other conceptual art forms. *Drawing in Time*, by Sonia Landy Sheridan (*frontispiece*), depicts a typical interface or exchange between artist and machine. It is, on one level, a diagram of the relationships among the drawing instrument (hand), the conceptualizing source (mind), and the image (display screen). Ascott, Binkley, and Tamblyn all address these relationships, leading us into cyberspace and positioning artists in the midst of its paradoxes and astounding potential.

As information expands exponentially, becomes the standard commodity of our culture and requires tedious processing to be useful, we come to see the proliferation of computers as a natural course of events. To note that computers enhance, complement, and sometimes supplant human control functions in all arenas has become almost prosaic. But for artists who have for centuries been wedded to materials that take shape in response to the hand, making art by a process that might cause the hand to atrophy is unsettling, to say the least.

We know, however, that artists are no strangers to cerebral processes; brain-eye-hand relationships have always figured prominently in their work, the balance among them shifting in response to individual artists' agendas as well as social and political constructions of what it means to make art. So it is not peculiar that artists, too, enlist cybernetic technologies and strive to comprehend their implications. Because these implications are ultimately quite philosophical and unseat some prevailing notions about art, the task of using computers effectively is far from easy. Artists looking for models from the history of art find few to draw on; in fact, it is often argued that the cultural impact of the computer is unique—more profound than that of any other technological innovation, with the exception of the printing press and possibly the camera. Tamblyn makes some useful comparisons with artists' uses of performance and video, however, and Margot Lovejoy cites some lessons to be learned from the recent evolution of photographic technology.

With computers suddenly attracting a great deal of attention among artists, it is easy to forget that they have been presenting their challenge to the arts for three decades. Many of the concerns that seem now so freshly urgent as we enter the 1990s were in fact investigated technically, aesthetically, and philosophically by the handful of pioneering artists who worked with computing machines during the sixties and seventies. Copper Giloth and Lynn Pocock-Williams chart this "old" history

in their time line, providing a chronology of art-related developments in computing technology; Goodman, drawing on her curatorial work for the landmark "Computers and Art" exhibition in 1987 (Everson Museum of Art, Syracuse, N.Y.), provides an overview of the various ways computers have been used historically to make art. While *making* a history, those early artists worked without the benefit of *having* a history of computer art. They also lacked a critical mass with regard to production, audience response, and constructive discourse. As a result, the issues of computer art remained less than fully formed, and the art itself, struggling in an infertile environment, failed to ripen. Through those years, work produced was occasionally a portentous venture into new territory, sometimes an interesting recasting of a former work but too often an empty outburst of technical bravura.

While impressive advances were made in the ways computers were used to *generate* images, ways in which computers were used to *create* meaningful art faltered. The subtle nuance of difference between those two words is perhaps a clue to the impasse that characterized computer art for so long: to "generate" means to bring into existence by natural processes, while to "create" means to bring something from the imagination, something that wouldn't naturally evolve, into being. It may be risky to espouse the word "create" because of its frequent equation with intuitive invention and autonomous authorship, both of which are widely regarded as problematic components of the modernist legacy and run counter to inherent aspects of digital art. However, it is used here to distinguish work that carries the voices of the artists and goes beyond the aimless adoption of the computer as an efficient spawner of images to dazzle the audience with visual acrobatics but little else.

The groundwork for significant technological movement in the arts was laid during the fifties, sixties, and seventies, as methods for computing digital images were devised and circulated within the scientific world. However, the polarization of art and science, reinforced by modernism's antipathy for modern technology, deterred the translation of these practices into a language understood by more than a handful of artists. Many of the articles here address the process of incorporating electronic technology into the art-making process, and many also prompt us to rethink our definitions of technology and its relation to art throughout history.

To some extent, traditional tools and technologies are so much a part of making art that they are frequently seen as passive background, having minimal significance in the resulting work, their use a simple matter of functional expedience. Similarly,

a new technology typically slides easily into art when it solves widely shared and pesky problems. Then its facets are learned and adopted quickly. But new technologies that abruptly disturb taken-for-granted conventions are not so casually embraced. They have both muddied the waters and shed new light on making art—sometimes simultaneously and other times in successive strokes.

Computers have done just this. As they have converged with more and more art practices, they have disrupted the agenda of modernism. However, this is by no means the first time that interference with modernism's steady current has been felt; digital technologies have served as a garish yellow highlighting pen, causing many of the old modernist dilemmas to jump off the page once again. These disruptions are presented here by Lovejoy, and they have also surfaced in the papers by George Legrady, Ascott, and Binkley. Similarly, the other artists and theorists writing here point to unavoidable conceptual shifts precipitated by computers, making it clear that the work of both criticism and production exposes the intricacies of the digital muse.

Lovejoy argues that photography's function in the evolution of both modernism and postmodernism has provided a paradigm for gauging the place of electronic media vis-à-vis art. She reiterates the perspective of Walter Benjamin, which places photography in a pivotal position to, as she says, collapse the aura of the original, the definition of art as unique object. By reconstructing photography's early twentieth-century history, she demonstrates how the critical ramifications of photography as a reproductive technology, once quashed, were resurrected forcefully in the 1960s in the work of Andy Warhol and Robert Rauschenburg.

As several of the other articles indicate, electronic technologies—first video and now digital imaging—have accelerated the changes initiated by photography and caused additional shifts to occur. Much of the old course of photography is being replayed with greater speed and fewer detours. The photographic paradigm, in conjunction with the further dissolution of rigid distinctions between art and non-art communication systems, has dumped computers right on the artist's doorstep. Just as electronic technologies are impossible to avoid in day-to-day activities throughout most of the world, their impact on the arts is not easily pushed under the rug. While conceptual reorganizations indebted to digital technologies are not coincident with the inventions themselves (as is made clear by Giloth's time line), it is unlikely that a century of computer art will pass without its transformative role being acknowledged, as happened with photography.

It is typical for many to look back on the photography of this century and agree that no other cultural phenomenon has had such importance since the invention of printing. But more and more often it is being recognized that the electronic processing of visual information is key to determining the shape of our world. When the people in the streets of Romania pleaded in January 1990 to see the videotapes—not just the still photographic frames—of the execution of their deposed dictator, Nicolae Ceausescu, and his wife, a sign was given that photography's position as arbiter of truth was rejected at even unschooled and spontaneous levels. Deconstruction of information is not just an activity of the postmodernist intellectual; its lessons have seeped into society at large. Electronic technologies facilitate the production and distribution of information: more pictures, words, and sounds reach more people. Simultaneously, more people participate in this process, learning to understand the complex layers of meaning in all texts—including pictures—and the relationships between texts, their creators, and their consumers.

Legrady analyzes these relationships with a political eye toward the way technology affects the kinds of images that are produced and the way we view or interpret them. *New York Times* critic Andy Grundberg said in a retrospective look at 1989, the 150th anniversary of photography, that still images were unable to keep up with the pace of world events, that photography's acquiescence to television had become confirmed.<sup>3</sup> However, reading Legrady, Lovejoy, and Binkley indicates that it's much more than a simple shift from one medium to another. It is the complex intertwining of photography, video, and older techniques of visual representation—drawing, painting, sculpture—with the new digital technologies that has changed communication and opened the door onto a new definition of art.

We might think of the gravitation toward television as a sign of the eighties and of our need to make our portrayals of reality more like reality. Certainly the idea of simulation was fundamental to the critical discourse of the past decade. As the mass media dish out increasingly large amounts of fabricated reality, such as the picture of the Sony skyjumper, or the amalgam of Oprah Winfrey's head with the actress

Ann-Margret's body on the cover of *TV Guide* in August 1989,<sup>4</sup> simulation and its quandaries become routine. While these two examples are assemblages of photographs of unrelated but real parts resulting in hybrids—photographic chimera—which carry the negative connotation of fakery, computers also make it possible to generate mathematically various "virtual realities" that do not necessarily, as described by Binkley, "bear the ontology or the semiology of one object parading as another." He sees computers as a means to step beyond the postmodern condition, a framework for "virtual creation without tools or media."

This optimistic attitude, which embraces the open-endedness, the pluralism, and the unpredictability of the computer as creative environment, is seen throughout much of the present issue. While Ascott proposes a scenario that positions artists as principal players in a worldwide social project, it is perhaps Craig Hickman who gives us the most uninhibited and playful encounter with the computer as a collaborative partner in the art process. In his retelling of the making of his artist's book, *Signal to Noise*, we participate vicariously in the lively reciprocation between artist and machine, experiencing much of what is intimated in the other articles. It is interesting to note that Sokolove, an artist who before coming to computers made objects, has also gravitated toward book form as a strategy for employing the special attributes of computers.

While words and images on the printed page cannot begin to match what would be gained through experiencing the new "electronic studios" directly or even through seeing the artworks at first hand, the present essays help to fill the void that many feel has plagued the development of digital art. This issue of *Art Journal* grew out of a panel at the 1989 CAA annual meeting in San Francisco; some of the original panelists reshaped their papers during the ensuing months and several additional essays were solicited. As we worked through 1989 and the first part of 1990, there were numerous group and solo exhibitions of electronic art. In addition, there was a surge of adamant and determined critical discourse that repositioned cybernetic technology as a more fully un-

derstood determinant of culture. Because of space constraints, we are not able to include critical reviews of these recent writings and exhibitions, although many of the most significant ones are cited in the last section.<sup>5</sup> The papers in this issue are intended to be evocative rather than definitive, encouraging further development of critical and aesthetic discourse. It is hoped that *Computers and Art: Issues of Content* will find a valued place alongside the other important writings that have broken the stalemate on the place of computers in art.

*Terry Gips is associate professor of photography and computer graphics at the University of Maryland, College Park. Her work has been exhibited internationally, and her chapter "Photography and Computers" in Photographic Possibilities by Robert Hirsh, is about to be released by Focal Press.*

#### Notes

- 1 There is much debate about what to call art made with a computer. "Digital art" can refer to any art whose description consists of the binary values on which computing technologies are based. I use the general phrase "computer art" occasionally, although it tends to conjure up flying logos on TV. "Electronic art" covers video and copier art as well as that employing computers, and there are many occasions when it is useful to discuss all three simultaneously.
- 2 Roy Ascott's paper suggests that technological developments are moving us toward a more equitable system of participation and that artists can do much to effect this change.
- 3 Andy Grundberg, "Blurred and Shaky Images That Burn in the Mind," *New York Times*, January 28, 1990 (Arts and Leisure), 1, 39.
- 4 *TV Guide*, August 26–September 1, 1989.
- 5 Of particular importance are the recent essays by Donna Cox, Timothy Binkley, Gene Youngblood, Brian Reffin Smith, and others in *Computer Art in Context: SIGGRAPH '89 Art Show Catalog*, Leonardo, supplemental issue, 1989 (Oxford and New York: Pergamon Press, 1989), and in Neil Sieling, ed., *The Techno/Logical Imagination: Machines in the Garden of Art*, exh. cat. (Minneapolis: Intermedia Arts Minnesota and Minneapolis College of Art and Design, 1989). I also wish to thank Timothy Druckrey for his suggestions pertaining to the bibliography.

Copyright of Art Journal is the property of College Art Association and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.